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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,359	08/19/2003	Ning An	50277-1068	4851

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EXAMINER
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CAO, PHUONG-THAO

ART UNIT	PAPER NUMBER
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2164

DATE MAILED: 12/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/643,359	<b>Applicant(s)</b> AN ET AL.	
	<b>Examiner</b> Phuong-Thao Cao	<b>Art Unit</b> 2164	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

1. This action is in response to Application filed on 08/19/2003.
2. Claims 1-17 are pending.

***Claim Objections***

3. Claims 2 and 12 are objected to because of the following informalities: there is lack of antecedent basis for “strict subset” in claim 2 which is considered as “subsets” by the examiner, “object” in claim 12 is considered as “objects” by the examiner. However, appropriate correction is required.

4. Claims 5, 13 and 17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. A computer-readable medium bearing instructions in claims 5, 13 and 17 does not perform the method according to claims 1, 6 and 14 respectively if it is not executed on a computer; as a result, it fails the infringement test for a proper dependent claim. See MPEP § 608.01(n).

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 6-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "objects distributed within the selected children" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claims 7-13 are rejected as incorporating the deficiencies of the rejected claim 6 upon which they depend.

***Claim Rejections - 35 USC § 101***

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 5, 13 and 17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As to claims 5, 13 and 17, the “computer-readable medium” is not limited to tangible media in accordance with Applicant’s specification, which states that it may be an electromagnetic wave, not in and of itself a tangible medium.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (“Merging R-trees: Efficient Strategies for Local Bulk Insertion”, GeoInformatica, Mar 2002).

As to claim 1, Chen et al. teach:

“A method of inserting a plurality of entries into an index keyed by multidimensional data” (see [page 8, paragraph 3]), comprising:

“selecting subsets of the index that overlap if the entries are inserted into the subsets of the index” (see [page 9, paragraph 2] and [page 10, paragraph 2] wherein “small tree” is equivalent to Applicant’s “subsets of index”, and the sibling nodes at each level of the small tree can overlap as illustrated in Applicant’s claim language);

“inserting the entries within the subsets of the index” (see e.g., [page 11, paragraphs 1-2] discloses that data are inserted into the small R-tree which in turn is inserting into the existing R-tree, wherein data is equivalent to Applicant’s “entries”, the existing R-tree is equivalent to Applicant’s “index”, and the small R-tree is equivalent to Applicant’s “subsets of index”); and

“reorganizing the subsets of the index with the inserted entries” (see [page 11, paragraph 2] wherein “R-tree” is equivalent to Applicant’s “the index” and “adjusting of the R-tree” is equivalent to “reorganizing the subsets of the index” as illustrated in Applicant’s claim language).

As to claim 2, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Chen et al. teach:

“wherein said reorganizing includes reorganizing such that an amount of overlap of bounding boxes for objects in the strict subset of the index is reduced” (see e.g., [page 10, paragraph 2] [page 12, paragraph 2] and [page 14, paragraphs 1-2] disclose the maintenance of an efficient index structure in the bulk insertion process such as to provide a good search performance, which means the disclosed reorganization must assure the sibling MBRs at each levels have less overlap between them, which is equivalent to Applicant’s claim language)

As to claim 3, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Chen et al. teach:

“the entries include spatial data” (see [page 7, paragraph 2]); and

“the index keyed by multidimensional data includes a spatial index” (see [page 7, paragraph 2]).

As to claim 4, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected including the following:

Chen et al. teach:

“wherein subset include sibling nodes of an R-Tree index” (see [page 10, paragraph 2] [page 11, paragraph 2] and [Figure 1, page 11] wherein “small tree”, a subset in the resultant tree, includes three nodes having the same parent node known as sibling nodes as illustrated in Applicant’s claim language).

As to claim 5, this claim is rejected based on arguments given above for rejected claim 1 and is similarly rejected.

As to claim 6, Chen et al. teach:

“A method of inserting a plurality of entries into a spatial index” (see [page 8, paragraph 3]) comprising:

“selecting at least two and less than all children of a node in the spatial index” (see e.g., [page 10, paragraph 5] and [page 11, paragraphs 1-2] disclose a small tree is inserted into the existing tree to create a resultant tree [Figure 1] wherein “resultant tree” is equivalent to Applicant’s “spatial index”, root node of the small tree is a node in the spatial index, and leaf

nodes of the small tree are children of a node in the spatial index; in order to insert data into the small tree as disclosed, its leaf node must be selected as illustrated in Applicant's claim language);

“distributing the entries within the selected children” (see e.g., [page 11, paragraph 1] discloses that data are inserted into the small tree as discussed above, wherein data is equivalent to Applicant's “entries” and leaf nodes of the small tree are equivalent to Applicant's “selected children”); and

“reorganizing objects distributed within the selected children” (see [page 11, paragraph 2] wherein “MBRs” are equivalent to Applicant's “objects” and “adjusting of the R-tree” is equivalent to Applicant's claim language).

As to claim 7, this claim is rejected based on arguments given above for rejected claims 6 and 2 and is similarly rejected.

As to claim 8, this claim is rejected based on arguments given above for rejected claim 7 and is similarly rejected including the following:

Chen et al. teach:

“wherein one of the bounding boxes includes a minimum bounding rectangle (MBR)” (see e.g., [page 10, paragraph 2] and [page 11, paragraph 2]).

As to claim 9, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:



Chen et al. teach:

“wherein at least two of the selected children have respective bounding boxes that overlap with one another” (see [page 10, paragraph 2] and [page 14, paragraphs 1-2]).

As to claim 10, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Chen et al. teach:

“wherein said selecting includes selecting exactly two of the children” (see e.g., [page 14, paragraph 2] discloses the merging of the two closest sibling nodes in order to leave an entry slot for the small tree root, this implies the selection of two sibling nodes, as illustrated in Applicant’s claim language).

As to claim 11, this claim is rejected based on arguments given above for rejected claim 10 and is similarly rejected including the following:

Chen et al. teach:

“wherein the exactly two of the children have respective bounding box that overlap with one another” (see [page 10, paragraph 2] and [page 14, paragraph 2]).

As to claim 12, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected including the following:

Chen et al. teach:

“wherein the object distributed among the selecting children include the entries” (see [page 10, paragraph 3] wherein “sets of data” is equivalent to Applicant’s “entries”; also see [page 14, paragraph 4]).

As to claim 13, this claim is rejected based on arguments given above for rejected claim 6 and is similarly rejected.

As to claim 14, Chen et al. teach:

“A method for inserting a plurality of entries into a multidimensional-keyed index organized as an R-Tree” (see [page 8, paragraphs 2-3]), comprising:

“associating a node in the R-tree with a buddy node that is a sibling of the node” (see e.g., [page 14, paragraphs 1-2] discloses the merge of sibling nodes, this is equivalent to Applicant’s claim language);

“clustering children of the node and children of the buddy” (see [page 14, paragraph 2] wherein the merge implies the combination of children of merged nodes, as illustrated in Applicant’s claim language);

“partitioning the clustered children and the entries into a plurality of groups, wherein at least one of the groups includes a child node of the cluster node, a buddy child node associated the child node, and one or more of the entries” (see [page 14, paragraph 14] discloses the technique of splitting a node, which implies the partitioning a clustered node into a plurality of nodes (equivalent to Applicant’s a plurality of groups), and the combination of splitting and merging can result as at least one node includes as illustrated in Applicant’s claim language);

“inserting said one or more of the entries among child node and the buddy child node associated the child node” (see e.g., [page 11, paragraph 1] discloses that data are inserted into the small tree as discussed above, wherein data is equivalent to Applicant’s “entries” and leaf nodes of the small tree are equivalent to Applicant’s “child node and the buddy child node associated the child node” [Figure 1]).

As to claim 15, this claim is rejected based on arguments given above for rejected claim 14 and is similarly rejected including the following:

Chen et al. teach:

“each node of the R-tree is associated with a respective bounding box” (see [page 11, paragraph 2] wherein “the MBR of the root node” implies each node of the tree is associated with a bounding box as illustrated in Applicant’s claim language); and

“a first bounding box associated with the child node overlap a second bounding box associated with the buddy child node” (see [page 10, paragraph 2] wherein overlap between sibling MBRs implies overlap between bounding box of the child node and bounding box of the buddy child box as illustrated in Applicant’s claim language).

As to claim 16, this claim is rejected based on arguments given above for rejected claim 14 and 2 and is similarly rejected.

*Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong-Thao Cao whose telephone number is (571) 272-2735. The examiner can normally be reached on 8:30 AM - 5:00 PM (Mon - Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PTC

December 14, 2005

  
Primary Examiner  
Art Unit 2167